

AMENDMENTS TO THE CLAIMS:

Without prejudice, this listing of the claims replaces all prior versions and listings of the claims in the present application:

LISTING OF CLAIMS:

Claims 1 to 12. (Canceled).

13. (Currently Amended) A method for encrypting data according to an asymmetrical method using a processor, based on a factorization problem, comprising: having

providing a public key to the processor; and

providing a private key to the processor; the public key being the iteration number L as well as the composite number n , ~~n preferably being the product of a plurality of large prime numbers;~~ the private key is made up of the factorization of n ; the message $m = (m_1, m_2)$ to be encrypted is made up of at least the components m_1 and m_2 ; an encryption function $f(x)$ is iterated a total of L times, with $c = (c_1, c_2) = f^L(m)$; $f(m) = (f_1(m), f_2(m))$ being applicable, and $f_1 = (m_1 \text{ op}_1 m_2) \bmod n$ as well as $f_2 = (m_1, \text{op}_2 m_2) \bmod n$; ~~op_1 preferably being an addition and op_2 preferably being a multiplication;~~ the encryption function $f(x)$ being selected in such a way that the encryption iteration can be reversed by the L -fold solution of a quadratic equation modulo n , it thereby being possible to retrieve the original message from the encrypted information $c = (c_1, c_2)$.

14. (Previously Presented) The method of claim 13, wherein a multivaluedness of the quadratic equation is eliminated by additional bits of a_i and b_i .

15. (Previously Presented) The method of claim 14, wherein the multivaluedness of the quadratic equation is eliminated by calculating a parity and a Jacobi symbol which, particularly in the case of prime numbers of form 3 mod 4, can be communicated by 2 bits per iteration step.

16. (Currently Amended) The method of claim 13, wherein general iterations $f_1 = (k_1 \bullet m_1 + k_2 \bullet m_2) \bmod n$ as well as $f_2 = k_3 \bullet m_1 \bullet m_2 \bmod n$ are used, ~~the~~ constants being part of the public key.

17. (Previously Presented) The method of claim 13, wherein the composite number n as public key contains more than two factors.

18. (Previously Presented) The method of claim 13, wherein the message is now made up of an N-tuple $m=(m_1...m_N)$, the formula for the Lth iteration step using dependencies of N values in each iteration step.

19. (Previously Presented) The method of claim 18, wherein the multivaluedness is resolved by additional bits that are derived from the values obtained in each iteration.

20. (Previously Presented) The method of claim 13, wherein the multivaluedness is resolved by redundancy in the transmitted data.

21. (Currently Amended) A method for generating a signature using a processor, comprising:

~~wherein generating using the processor a signature is generated~~ by interchanging the encryption and decryption steps, including functions for encrypting data according to an asymmetrical method, based on a factorization problem, having a public key and a private key; the public key being the iteration number L as well as the composite number n , ~~n~~ preferably being the product of a plurality of large prime numbers; the private key being made up of the factorization of n ; the message $m = (m_1, m_2)$ to be encrypted being made up of at least the components m_1 and m_2 ; an encryption function $f(x)$ being iterated a total of L times, with $c=(c_1,c_2)=f^L(m)$; $f(m)=(f_1(m),f_2(m))$ being applicable, and $f_1=(m_1 op_1 m_2) \bmod n$ as well as $f_2=(m_1, op_2 m_2) \bmod n$; ~~op_1 preferably being an addition and op_2 preferably being a multiplication~~; the encryption function $f(x)$ being selected in such a way that the encryption iteration can be reversed by the L -fold solution of a quadratic equation modulo n , it thereby being possible to retrieve the original message from the encrypted information $c = (c_1, c_2)$.

22. (Currently Amended) A software for a computer, comprising:

functions for encrypting data according to an asymmetrical method being executed by a processor, based on a factorization problem, having a public key and a private key; the public key being the iteration number L as well as the composite number n , ~~n~~ preferably being the product of a plurality of large prime numbers; the private key being made up of the factorization of n ; the message $m = (m_1, m_2)$ to be encrypted being made up of at least the components m_1 and m_2 ; an encryption function $f(x)$ being iterated a total of L times, with $c=(c_1,c_2)=f^L(m)$; $f(m)=(f_1(m),f_2(m))$ being applicable, and $f_1=(m_1 op_1 m_2) \bmod n$ as well as $f_2=(m_1, op_2 m_2) \bmod n$; ~~op_1 preferably being an addition and op_2 preferably being a multiplication~~; the encryption function $f(x)$ being selected in such a way that the encryption

iteration can be reversed by the L -fold solution of a quadratic equation modulo n , it thereby being possible to retrieve the original message from the encrypted information $c = (c1, c2)$.

23. (Currently Amended) A data carrier for a computer, comprising:

~~the storage of a software for a~~ the computer, comprising functions for encrypting data according to an asymmetrical method, based on a factorization problem, having a public key and a private key; the public key being the iteration number L as well as the composite number n , ~~n preferably being the product of a plurality of large prime numbers~~; the private key being made up of the factorization of n ; the message $m = (m_1, m_2)$ to be encrypted being made up of at least the components m_1 and m_2 ; an encryption function $f(x)$ being iterated a total of L times, with $c=(c_1,c_2)=f^L(m)$; $f(m)=(f_1(m),f_2(m))$ being applicable, and $f_1=(m_1 op_1 m_2) \bmod n$ as well as $f_2=(m_1, op_2 m_2) \bmod n$; ~~op_1 preferably being an addition and op_2 preferably being a multiplication~~; the encryption function $f(x)$ being selected in such a way that the encryption iteration can be reversed by the L -fold solution of a quadratic equation modulo n , it thereby being possible to retrieve the original message from the encrypted information $c = (c1, c2)$.

24. (Currently Amended) A computer system, comprising:

a device that allows the execution of a method, the method comprising: software for a computer, comprising functions for encrypting data according to an asymmetrical method, based on a factorization problem, having a public key and a private key; the public key being the iteration number L as well as the composite number n , ~~n preferably being the product of a plurality of large prime numbers~~; the private key being made up of the factorization of n ; the message $m = (m_1, m_2)$ to be encrypted being made up of at least the components m_1 and m_2 ; an encryption function $f(x)$ being iterated a total of L times, with $c=(c_1,c_2)=f^L(m)$; $f(m)=(f_1(m),f_2(m))$ being applicable, and $f_1=(m_1 op_1 m_2) \bmod n$ as well as $f_2=(m_1, op_2 m_2) \bmod n$; ~~op_1 preferably being an addition and op_2 preferably being a multiplication~~; the encryption function $f(x)$ being selected in such a way that the encryption iteration can be reversed by the L -fold solution of a quadratic equation modulo n , it thereby being possible to retrieve the original message from the encrypted information $c = (c1, c2)$.

25. (New) The method of claim 13, wherein n is a product of a plurality of large prime numbers.

26. (New) The method of claim 25, wherein op_1 is an addition and op_2 is a multiplication.

27. (New) The method of claim 13, wherein op_1 is an addition and op_2 is a multiplication.

28. (New) The method of claim 21, wherein n is a product of a plurality of large prime numbers, and op_1 is an addition and op_2 is a multiplication.

29. (New) The method of claim 22, wherein n is a product of a plurality of large prime numbers, and op_1 is an addition and op_2 is a multiplication.

30. (New) The method of claim 23, wherein n is a product of a plurality of large prime numbers, and op_1 is an addition and op_2 is a multiplication.

31. (New) The method of claim 24, wherein n is a product of a plurality of large prime numbers, and op_1 is an addition and op_2 is a multiplication.